

REFERENCE ELECTRODE HAVING A MICROFLUIDIC FLOWING LIQUID JUNCTION

Abstract of the Disclosure

A flowing junction reference electrode comprises a microfluidic liquid junction member situated between a pressurized reference electrolyte solution and a sample solution. The liquid junction member has an array of nanochannels spanning the member and physically connecting the electrolyte and the sample. The number of nanochannels in the array can be between 10 and 10^8 . Preferably, the nanochannels are substantially straight and parallel to one another. The nanochannels can be coated to facilitate the flow of the electrolyte solution through the junction member. The nanochannels can have widths of between 1 and 500 nanometers, and the width of any one nanochannel is substantially equal to the width of any other nanochannel. The member can be manufactured out a polymer such as polycarbonate and polyimide, and may also be made of silicon, glass, or ceramic. In one embodiment, the reference electrode includes means for pressurizing the electrolyte solution.

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